CLAIM AMENDMENTS

This listing of claims will replace all prior versions and listings of claims in the application.

1   1.   (Previously Presented) A method of emulating Virtual Provide Local Area

2   Network Service (VPLS) in an Asynchronous Transfer Mode (ATM) network,

3   comprising:

4   configuring, at a plurality of provider edge devices (PEs) arranged in a

5   Private Network-Network Interface (PNNI) hierarchy, a VPLS having a VPLS

6   Identifier (ID);

7   at each PE, generating a PNNI Topology State Element (PTSE) including a

8   VPLS Information Group (IG), the VPLS IG indicating the VPLS ID and an ATM

9   address associated with the VPLS;

10   flooding each VPLS IG throughout the PNNI hierarchy to exchange

11   information between the PEs;

12   establishing a mesh of virtual circuits in the ATM network to emulate VPLS

13   by attaching virtual circuits to pairs of PEs, each of the pairs of PEs in the mesh

14   comprising a first PE and a second PE, wherein establishing each virtual circuit

15   between the first PE and the second PE comprises:

16   selecting the first PE and the second PE for the virtual circuit when

17   the first PE determines that the second PE supports the VPLS ID;

18   determining whether the first PE or the second PE should initiate the

19   virtual circuit;

20   automatically establishing the virtual circuit between the first PE and

21   the second PE using the respective ATM address of each PE as endpoints of

22   the virtual circuit, wherein the virtual circuit has a traffic characteristic

23   equal to a minimum traffic characteristic of the first PE and the second PE.

1   2.   (Original) The method of claim 1 wherein at each PE, the respective ATM

2   address associated with the VPLS is unique to the VPLS.

1   3.   (Previously Presented) The method of claim 1, wherein a second VPLS is

2   emulated at a plurality of the PEs, and wherein at each such PE the respective

3   ATM address associated with the VPLS is also associated with the second VPLS.

1   4.   (Canceled)

1   5.   (Previously Presented) The method of claim 1, further comprising:

2   at each PE, flooding the PTSE throughout a peer group of the PE, each peer

3   group having a peer group leader;

4   at each peer group leader, receiving each PTSE generated by a PE within the

5   peer group of the peer group leader and flooding such PTSEs throughout a parent

6   logical group of the peer group leader;

7   at each peer group leader, receiving at least one other PTSE, each other

8   PTSE containing a VPLS IG indicating an association between the VPLS ID and an

9   ATM address, from the parent logical group of the peer group leader; and

10   at each peer group leader, flooding the at least one other PTSE throughout

11   the peer group of the peer group leader.

1   6.   (Currently Amended) A method of emulating Virtual Provide Local Area

2   Network Service (VPLS) in an Asynchronous Transfer Mode (ATM) network,

3   comprising:

4   configuring, at a plurality of provider edge devices (PEs), arranged in a

5   Private Network-Network Interface (PNNI) hierarchy, a VPLS having a VPLS

6   Identifier (ID);

7   associating an ATM address with the VPLS ID;

8   at each PE, generating a Private Network-Network Interface (PNNI)

9   Augmented Routing (PAR) Service IG including the VPLS ID, an ATM address

10   associated with the VPLS, and a traffic characteristic associated with both the

11   VPLS ID and the ATM address;

12   advertising the association between the VPLS ID and the ATM address to

13   other nodes within the ATM network;

14   flooding each PAR Service IG throughout the ATM network;

15   establishing a mesh of virtual circuits in the ATM network to emulate VPLS

16   by attaching virtual circuits to pairs of PEs, each of the pairs of PEs in the mesh

17   comprising a first PE and a second PE, wherein establishing each virtual circuit

18   between the first PE and the second PE comprises:

19   selecting the first PE and the second PE for the virtual circuit when

20   the first PE determines that the second PE supports the VPLS ID;

21   determining whether the first PE or the second PE should initiate the

22   virtual circuit;

23   determining other ATM addresses within the ATM network which are

24   associated with the VPLS;

25   for each such other ATM address, determining whether the ~~PE~~ first PE

26   or the second PE is to set up a virtual circuit with the ATM address;

27   automatically establishing the virtual circuit between the first PE and

28   the second PE using the respective ATM address of the first PE and the

29   second PE as endpoints of the virtual circuit, wherein the virtual circuit

30   comprises a traffic characteristic equal to the minimum traffic characteristic

31   of the first PE and the second PE.

1 7. (Previously Presented) The method of claim 6, wherein at least one other PE

2 uses Proxy PAR to exchange with PEs ATM addresses to be associated with the

3 VPLS.

1 8. (Previously Presented) The method of claim 7, wherein the at least one other

2 PE is attached to the ATM network via an ATM link employing an ATM User

3 Network Interface (UNI) signaling protocol.

1 9. (Previously Presented) The method of claim 7, wherein the at least one other

2 PE is attached to the ATM network via an ATM link employing an ATM Inter-

3 Network Interface (AINI) signaling protocol.

1 10-12. (Canceled)

1 13. (Currently Amended) A method of emulating a Virtual Private Local Area

2 Network Service (VPLS) at a Provider Edge device (PE) within an Asynchronous

3 Transfer Mode (ATM) network, comprising:

4   configuring, at the PE, a VPLS Identifier (ID) associated with the VPLS,

5 including associating an ATM address with the VPLS ID;

6   advertising the association between the VPLS ID and the ATM address to

7   other nodes within the ATM network, including advertising at least one traffic

8   characteristic to be associated with the VPLS ID and the ATM address;

9   determining other ATM addresses within the ATM network which are

10 associated with the VPLS;

11   generating a PNNI Topology State Element (PTSE) including a VPLS

12 information group (IG), the VPLS IG indicating the VPLS ID and the ATM address

13 associated with the VPLS;

14   flooding the PTSE throughout the peer group of the node;

15   generating a Private Network-Network Interface (PNNI) Augmented Routing

16 (PAR) Service information group (IG) including the VPLS ID and the ATM address;

17   flooding the PAR Service IG throughout the ATM network; and

18   establishing a mesh of virtual circuits in the ATM network to emulate VPLS

19 by attaching virtual circuits to pairs of PEs, each of the pairs of PEs in the mesh

20 comprising a first PE and a second PE, wherein establishing each virtual circuit

21 between the first PE and the second PE comprises:

22   for each such other ATM address, determining whether the ~~PE~~ first PE

23 or the second PE is to set up the virtual circuit with the ATM address;

24   selecting the first PE and the second PE for the virtual circuit when

25 the first PE determines that the second PE supports the VPLS ID;

26   determining whether the first PE or the second PE should initiate the

27   virtual circuit; and

28   automatically establishing the virtual circuit between the first PE and

29   the second PE using the respective ATM address of the first PE and the

30   second PE as endpoints of the virtual circuit, wherein the virtual circuit

31   comprises a traffic characteristic equal to a minimum of the at least one

32   traffic characteristic and a second traffic characteristic associated with the

33   other ATM address.

1   14.   (Previously Presented) The method of claim 13, further comprising:

2   setting up the virtual circuit in conformance with the at least one traffic

3   characteristic.

1   15-16.   (Canceled)

1   17.   (Previously Presented) A node within an Asynchronous Transfer Mode (ATM)

2   network, wherein the node is part of a Private Network-Network Interface (PNNI)

3   hierarchy, comprising:

4   means for receiving a Virtual Private Local Area Network Service (VPLS)

5   identifier (ID); and

6   a VPLS controller comprising a computer-readable medium encoded with

7   instructions, the computer-readable medium comprising:

8   instructions for receiving a service identifier (ID) identifying a service;

9   instructions for generating a PNNI Topology State Element (PTSE) including

10   a service information group (IG), the service IG indicating the service ID and an

11   ATM address to be associated with the service;

12   instructions for flooding the service IG throughout the PNNI hierarchy by

13   generating at least one message, each message containing at least two PTSEs;

14   instructions for determining other ATM addresses within the ATM network

15   which are associated with the VPLS ID;

16   instructions for, for each such other ATM address, determining whether the

17   node is to set up a virtual circuit with the other ATM address, the instructions for

18   guaranteeing that only one virtual circuit is set up between the node and the other

19   ATM address;

20   instructions for establishing a mesh of virtual circuits to emulate VPLS by

21   attaching virtual circuits to pairs of PEs, each of the pairs of PEs in the mesh

22   comprising a first PE and a second PE, wherein the instructions for establishing

23   each virtual circuit between the first PE and the second PE further comprise:

24   instructions for selecting the first PE and the second PE for the

25 virtual circuit when the first PE determines that the second PE supports the

26 VPLS ID;

27   instructions for determining whether the first PE or the second PE

28 should initiate the virtual circuit; and

29   instructions for automatically establishing the virtual circuit between

30 the first PE and the second PE using the respective ATM address of the first

31 PE and the second PE as endpoints of the virtual circuit.

1   18.   (Canceled)

1   19.   (Previously Presented) The node of claim 17, further comprising:

2   instructions for generating a PNNI Augmented Routing (PAR) Service

3 information group (IG), the PAR service IG including the VPLS ID and the ATM

4 address to be associated with the VPLS; and

5   instructions for flooding the PAR service IG throughout the ATM network.

1   20.   (Previously Presented) The node of claim 17, wherein the instructions for

2 advertising the association between the ATM address and the VPLS ID comprise

3 instructions for delivering the association to a second node using Proxy PAR.

1   21-22. (Canceled).